IN THE SPECIFICATION:

Paragraph beginning at page 1, line 6 has been amended as follows:

The present invention relates to an electrophotographic recording device, such as a printer for forming a multicolor image composed of a combination of different color images, and more particularly, to an electrophotographic recording device for printing a full color image by superimposition transfer of Y, M, C and K color images by means of plural electrostatic recording units. Furthermore, the present invention relates to an electrophotographic recording device having a color matching function for adjusting color slippage and density of a color image into an optimal state.

Paragraph beginning at page 3, line 6 has been amended as follows:

FIG. 1 is a flowchart of color matching processing based on automatic correction function in the prior art. Conditions such as correction operation timing are beforehand decided at the stage of forwarding from a factory, and cannot be set by an operator. The automatic correction function usually acts when the power source of a printing device is turned on or when the cover thereof is opened or shut. When the power source of the printing device is turned on, an initial setup is performed in step S1. The initial setup includes the initial setup of its hardware, reading of various set values stored in its nonvolatile memory, and check of abnormality of its circuit (self diagnosis). Subsequently, in step S2, a color matching request is set since color matching processing is necessary at the time of use-start of the device based on turning-on of the power

source. When the cover is closed after the cover is opened and the toner unit is exchanged, a color matching request is set in step S2. This is because color matching is necessary against the positional slippage of the LED head of the device. In step S3, initial processing in the printing mechanism unit is performed, in order to perform initial action of printing process and so on to make printing possible. When printing can be performed after the end of the initial processing, the present algorithm goes to a loop of waiting for printing (steps S4-S7). In the top step S4 of this loop of waiting for printing, it is checked whether or not there is a color matching request. If the color matching request is present, color matching processing is performed in step S5. That is, color matching processing is performed only one time in step S5 immediately after the initial processing in step S3. After the color matching processing, it is checked in step S6 whether or not there is a printing request. If the printing request is present, the algorithm goes to step S7 to perform printing. On the other hand, in the case that an alarm breaks out during the processing of the printing wait loop S4-S7, non-illustrated alarm processing is performed. In the alarm processing, it is repeatedly checked whether or not causes for the abnormality are removed. When all of the causes for the abnormality are removed, the algorithm is restored from the alarm processing to the printing wait loop. In the case that during the outbreak of the alarm the cover is being opened, the algorithm goes from the cover close stage to the printing wait loop through steps S2 and S3. In this case, the color matching request is set up in step S2. Therefore, the algorithm advances from step 4 to step S5 to carry out color matching processing. However, in the case that the cover is not opened during the outbreak of the alarm, the algorithm returns to the

top of the printing wait loop (steps S4-S7) without performing the setup of the color matching request in step S2 and the initial processing in step S3 so as to perform the above-mentioned processing again. In [[the]] this case, no color matching request is set, so that no color matching in the step S5 is performed. However, in the automatic correction mode, such conventional color matching processing is automatically performed whenever the power source is turned on or whenever the cover is closed. Thus, much time is required for the color matching, so that throughput drops. In the case of printing that does not require precision, for example, test printing, a problem that it takes too much time until the result of the printing is checked arises. On the other hand, all operations are left in the charge of an operator in the manual correction mode. Thus, even if color slippage is ~~caused~~ generated, no color matching is carried out unless the operator becomes aware ~~thereof~~ of it. Color slippage or change in the density of toner is easily caused by change in the internal temperature in the printing device; however, no color matching is performed unless the operator becomes aware of the change in the internal temperature. Thus, an entire manual correction mode has a problem that color slippage is enlarged ~~owing to~~ as a result of the exchange of the toner or change in the internal temperature. Against the problem of the enlargement of color slippage based on the change in the internal temperature, in a printing device a temperature sensor is set up to perform color matching correction operation on the basis of temperature data from the sensor (JP Publication Number 8286566). However, the relationship between the change in the internal temperature and the ~~quantity~~ amount of color slippage vary dependently on use environment of the printing device,

the frequency of printing, and so on. Even if the relationship between the change in the temperature and timing of color matching is qualitatively decided, the color matching operation becomes insufficient ~~dependently~~ depending on the situation so that the quantity of color slippage increases. Contrarily, the frequency of the color matching operation becomes high, causing a problem that throughput drops. Furthermore, the temperature sensor and a control unit for the sensor are mounted so that costs rise. A problem based on malfunction of the temperature sensor also arises.

Paragraph beginning at page 7, line 1 has been amended as follows:

The subject of the electrophotographic recording device of the present invention is any electrophotographic recording device using toner components having different colors. This electrophotographic recording device comprises, for example, a belt unit which absorb a recording sheet thereon and feeding it at a constant speed; electrostatic recording units, arranged along the direction of the feed of the recording sheet, and form latent images corresponding to image data by optical scanning of exposure devices onto rotating photosensitive drums, developing the latent images with toner components having different colors, and then transferring the developed images onto the recording sheet on the belt unit; a color matching processing unit which perform color matching processing including color slippage correction of different color images. In the present invention, such an electrophotographic recording device is characterized by comprising an automatic color matching mode processing unit which work the color matching

processing unit when conditions beforehand decided in the state that an automatic correction mode is set up are realized; and a manual color matching mode processing unit which [[work]] controls the color matching processing unit when this unit recognizes an operator's manual color matching instructing operation in the state that a non-correction mode is set up. In the case that mono color printing is mainly performed or an image having patterns in which no notice is taken of color slippage, for example, for check of layout, is printed, no color matching processing is performed by setting the non-correction mode in the electrophotographic recording device of the present invention even if the power source is turned on. A first printed matter is promptly obtained, and printing wait time is made short. In the automatic correction mode, the time interval of color matching processing, as a condition of automatic correction, can be changed. By setting the time interval to a small value, it is possible to attain high-precision color slippage correction wherein effect of the change in the temperature is not easily produced. If the time interval of color matching processing is set to a large value, it is possible to reduce the amount of toners used for transferring toner marks for detecting color slippage onto the belt.

Paragraph beginning at page 8, line 19 has been amended as follows:

The automatic color matching mode processing unit comprises a pre-printing correction mode, a periodic correction mode, and a composite correction mode including the pre-printing correction mode and the periodic correction mode, any one of which is selected by operator's operation. The detail of the processing in the pre-printing correction mode is as follows. In the

case of receipt of a printing request, printing is started without working the color matching processing unit when elapsed time Tw from the preceding color matching processing is below a given time m (for example, T1 = 10 minutes); and when the elapsed time Tw is not less than the given time m, the color matching processing unit is worked and subsequently printing is started. When the automatic color matching mode processing unit recognizes selection of the pre-printing correction mode by the operator, this unit works the color matching processing unit before start of printing in the case of receipt of a printing request. This pre-printing correction mode is suitable for cases that constantly require printed results with high-precision color slippage correction. When the automatic color matching mode processing unit recognizes selection of the periodic correction mode by the operator, this unit works the color matching processing unit, in a printing wait state, whenever the elapsed time Tw from the preceding color matching processing reaches a given periodic time n (for example, T2 = 20 minutes). According to this periodic correction mode, printing wait time becomes relatively long. This mode is suitable for cases requiring printed results with high-precision color slippage correction. In the case that the automatic color matching mode processing unit recognizes selection of the composite correction mode by the operator, at the time of receiving a printing request this unit works the color matching processing unit before start of printing; and this unit works the color matching processing unit, in a printing wait state, whenever the elapsed time Tw from the preceding color matching processing reaches a given periodic time n (for example, T2 = 20 minutes). The manual color matching mode processing unit recognizes an operator's manual color matching

instructing operation, this unit [[works]] controls the color matching processing unit forcibly even if the mode of the automatic color matching mode processing unit is selected. Therefore, even in the automatic correction mode, the operator can perform manual color matching correction at any time without canceling the automatic correction mode when the operator watches printed results to judge that color matching processing is necessary. The color matching processing unit performs density correction of the respective color images designated by the operator, as well as color slippage correction of the different color images. In other words, in either of the automatic correction mode or the non-correction mode of color matching processing, it is possible to perform not only color slippage correction but also density correction for adjusting the densities of the toners dependently on density correction conditions set at this time. The device of the present invention may comprise an operator operation panel for performing mode selection operation for the automatic color matching mode processing unit, and manual color matching designation operation for the manual color matching processing unit. The device of the present invention may comprises an interface processing unit which perform mode selection operation for the automatic color matching mode processing unit through a screen of a terminal of an external unit connected to a network, and receive and process a request of manual color matching designation operation for the manual color matching processing unit 80.

Paragraph beginning at page 17, line 7 has been amended as follows:

FIGs. 3A and 3B are block views of a hardware of the printing device of the present

invention. This hardware is composed of an engine 30 and a controller 32. The engine 30 is provided with a mechanical controller 34 for performing control of the printing mechanism composed of the convey belt unit 11, the electrostatic recording units 24-1 to 24-4 and so on, shown in FIG. 2, and color matching processing according to the present invention. A MPU 36 for processing sensors, which transfers toner marks at the time of color matching processing to measure color slippage quantity and toner density, is connected to the mechanical controller 34. To the sensor processing MPU 36 are inputted detection signals from the pair of the sensors 28-1 and 28-2 set up below the endless belt 12, as digital data sampled by AD converters 38-1 and 38-2. The mechanical controller 34 is connected to the controller 32 side through an engine connector 40. The printing mechanism set up in the engine 30 is illustrated by picking up the endless belt 12 and LED arrays 28-1, 28-2, 28-3, and 28-4 that are fitted to the respective Y, M, C and K electrostatic recording units and function as exposure devices. In the controller 32, a MPU 42 for the controller is set up. To the MPU 42 for the controller, for example, a personal computer 62 as a higher rank device is connected through an interface processing unit 44 and a controller connector 46. The personal computer 62 has a driver 66 for printing color image data supplied from any application program 64. This driver 66 is connected to the controller connector 46 of the controller 32 through a personal computer connector 68. The driver 66 has operation functions that a printing control screen is used to select and designate, to the printer side, one or more of various modes or set values necessary for color printing processing. The MPU 42 in the controller 32 is provided with image memories 52-1, 52-2, 52-3 and 52-4 for

developing Y, M, C and K image data transmitted from the personal computer 62 into pixel data (dot data) and storing the pixel data. The MPU 42 for the controller is connected to the engine 30 through the interface processing unit 48 and the controller connector 50, and receives positional slippage data or toner density data detected at the side of the engine 30 to perform, for the pixel data on the respective toners developed in the image memories 52-1 to 52-4, color matching processing including positional slippage correction and toner density correction. The MPU 42 for the controller has an address designating unit 54 for designating addresses when the respective color pixel data are developed in the image memories 52-1 to 52-4. The address designating unit 54 has a function for performing address-conversion for positional slippage correction based on the positional slippage data supplied from the side of the engine 30. The IF processing unit 44 has a function as a mode designation processing unit about color matching processing. When the IF processing unit 44 receives an operation request from the driver 66 of the personal computer 62 or an operation request from an operation panel 70 of the printer itself by interruption, the IF processing unit 44 sets up one of the various modes in accordance with the operation request. In accordance with the result of the set mode, the mechanical controller 34 performs color matching processing.

Paragraph beginning at page 19, line 18 has been amended as follows:

FIG. 4A and 4B are block views of a structure for performing the color matching processing according to the present invention. The mechanical controller 34 of the color printer

10 has a color matching unit 76, an automatic color matching mode processing unit 78, and a manual color matching mode processing unit 80. The controller 42 has the interface processing unit 48 functioning as a mode designation processing unit. The interface processing unit 48 receives selection of the mode through the operation panel 70 or the printing control screen 74 of the personal computer 62 connected to the terminal, so as to perform mode setup and color matching processing. The color matching unit 76 is composed of a color slippage correction unit 84 and a density correction unit 86. The color slippage correction unit 84 corrects printing position slippage between the respective Y, M, C and K color images based on positional slippage of the LED printer heads in the electrostatic recording unit 24-1 for yellow, the electrostatic recording unit 24-2 for magenta, the electrostatic recording unit 24-3 for cyan, and the electrostatic recording unit 24-4 for black. The density correction unit 86 corrects a color tone based on the difference between the densities of the color images of the respective Y, M, C and K toners. Specifically, in the color slippage correction by the color slippage correction unit 84, toner marks for detecting color slippage are transferred onto the plane of the belt described in Japanese Patent Application Laid-Open No. 11-202737 by the present Applicant, and the toner marks are read by the sensors 26-1 and 26-2 so that the sensor processing MPU 36 detects the color slippage quantities between the respective images. The density correction unit 86 also transfers toner marks of the respective toners on the belt, and the sensor 26-1 side reads the toner marks to obtain the adhesion amount and the density of the respective toners. Density correction is then performed in [[the]] a manner that designated densities can be obtained. The color

slippage correction and the density correction are carried out by adjusting the length and the timing of light emitting time per pixel of the LED heads set up in the Y, M, C and K electrostatic recording units 26-1 to 26-4. The automatic color matching mode processing unit 78 becomes valid when any one of the pre-printing correction mode, the periodic correction mode, and the composite mode including the pre-printing correction mode and the periodic correction mode, each of which is beforehand decided as an automatic mode in the interface processing unit 48, is designated. The unit 78 monitors the realization of conditions matching with the designated mode. Upon the realization of the conditions, the unit 78 [[works]] controls the color matching processing unit 76 and causes the unit 76 to perform color slippage correction through the color slippage correction unit 84 and density correction through the density correction unit 86. The automatic color matching mode processing unit 78 has a pre-printing correction mode processing unit 88, a periodic correction processing mode 90 and a composite mode processing unit 92, correspondingly to the modes that can be designated. Furthermore, this unit 78 has a standby time timer 94 for monitoring a time interval for color matching in each of the modes. When the pre-printing correction mode processing unit 88 receives a printing request from the personal computer 62, the unit 88 performs color matching correction before printing. However, in the pre-printing correction mode, color matching correction is not necessarily performed when the recording request is received. If elapsed time from the preceding color matching processing or the end of printing is not less than a given time m, which is set up in selection of the mode, color matching processing is performed. In the case that the elapsed time is below the given time m,

no color matching process is performed before printing even if the printing request is received. The periodic correction mode processing unit 90 performs color matching processing in the case that elapsed time from the preceding color matching processing or the end of printing becomes not less than a given time n in a printing standby state. The composite correction mode processing unit 92 includes the pre-printing correction mode processing unit 88 and the periodic correction mode processing unit 90. If a printing request is received and elapsed time from the preceding color matching processing or the end of printing is not less than the given time m, which is set up in selection of the pre-printing correction mode, color matching processing is performed. In the case that elapsed time from the preceding color matching processing or the end of printing becomes not less than the given time n, which is set up in the periodic correction mode, in a printing standby state, color matching processing is performed. In the processing of each of the pre-printing correction mode processing unit 88, the periodic correction mode processing unit 90 and the composite correction mode processing unit 92, the standby time timer 94 resets timer value Tw at the time of color matching processing or the end of printing processing to count elapsed time. The manual color matching mode processing unit 80 has a non-correction mode processing unit 95. The non-correction mode processing unit 95 becomes valid by designation of a non-correction mode through the printing control screen 75 of the personal computer 62 or the operation panel 70, so that no color matching processing is performed in either pre-printing state or printing standby state. Color matching processing can be performed only in the case that the operation panel 70 or the printing control screen 74 of the

personal computer 62 is used to designate execution of manual color matching. In other words, in the non-correction mode, no automatic color matching processing is performed by the non-correction mode processing unit 95 in the printer and color matching processing can be performed only by operator's manual operation. The operation of execution of manual color matching through the operation panel 70 and the printing control screen 75 of the personal computer 62 is valid in the state that any one mode is set by the automatic color matching mode processing unit 78. Regardless of the state of the automatic mode, the automatic color matching mode processing unit 78 causes the color matching processing unit 76 to perform color matching processing forcibly when the interface processing unit 48 recognizes a request of manual color matching execution as an interruption request.